



FOUO "SECRET"

The polybasic acid anhydride(b-1) having at least two acid anhydride groups has preferably an acid value of 200-1,500 mgKOH/g, more preferably of 500-1,300 mgKOH/g. The acid anhydride includes the anhydride of a C4-C30 aliphatic carboxylic acid having four or more carboxyl groups and an aromatic carboxylic acid having 1-3 benzene rings which has four or more carboxyl groups, where the two or more benzene rings may be condensed or bonded each other directly or through a bridge group. The intermediating bridge group includes oxygen, sulfur, sulfonyl, and a C1-C3 alkylene group. The polybasic acid anhydride includes pyromellitic acid anhydride, benzophenone tetracarboxylic acid dianhydride, biphenyl tetracarboxylic acid dianhydride, biphenylether tetracarboxylic acid dianhydride, diphenyl sulfone tetracarboxylic acid dianhydride, butane tetracarboxylic acid dianhydride, and ethylene glycol bis(anhydrotrimellitate). These may be used alone or in the combination of 2 or more.

The polyisocyanate compound(c) includes preferably a C3-C15 aliphatic or C6-C15 aromatic di- or tri-isocyanate such as 2,4- and/or 2,6-tolylene diisocyanate, 4,4'-diphenylmethane diisocyanate(MDI), polymeric MDI, 1,5-naphthylene diisocyanate, tridine diisocyanate, 1,6-hexamethylene diisocyanate, trimethyl hexamethylene diisocyanate, isophorone diisocyanate, xylilene

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diisocyanate(XDI), hydrogenated XDI, hydrogenated MDI, lysine diisocyanate, triphenylmethane triisocyanate, and tris(isocyanatephenyl) thiophosphate. The aliphatic polyisocyanate may be branched and have a substituent such as carboxyl. The aromatic isocyanate may have two or more benzene rings which are condensed or bonded each other directly or through a bridge group, as in the above description of polybasic acid anhydride. These polyisocyanate compounds may be used alone or in the combination of 2 or more. A C5-C9 aliphatic diisocyanate that may have carboxyl as the substituent and a lower alkyl-substituted phenyldiisocyanate are preferable. A phenyldiisocyanate substituted with 1-2 methyl groups is more preferable.

The word "lower" as used in "lower alkyl" for example means C1-C6, preferably C1-C4, more preferably C1-C3 in the present invention.

The ethylenically unsaturated group-containing hydroxy compound (d) is preferably an acrylate group-containing hydroxy compound. The preferable acrylate group-containing hydroxy compound is a C1-C30, preferably C2-C6 alkyl mono- or poly-(meth)acrylate having 1-3 hydroxy groups, and is especially preferably a monohydroxy lower alkylacrylate. The acrylate group-containing hydroxy compound usable in the present invention includes 2-hydroxyethyl (meth)acrylate,